



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,461	01/05/2006	Warren Smook	9031-1017	1343
<div>465 7590 08/18/2010</div> <div>YOUNG & THOMPSON 209 Madison Street Suite 500 Alexandria, VA 22314</div>				
EXAMINER				
LEWIS, TISHA D				
ART UNIT		PAPER NUMBER		
3655				
NOTIFICATION DATE		DELIVERY MODE		
08/18/2010		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

DocketingDept@young-thompson.com

Office Action Summary

Application No.

10/563,461

Applicant(s)

SMOOK ET AL.

Examiner

TISHA D. LEWIS

Art Unit

3655

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13, 15 and 16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15 and 16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/C)
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____
- Paper No(s)/Mail Date: ____

DETAILED ACTION

The following is a response to the request for reconsideration received on June 18, 2010 which has been entered.

Response to Arguments

Claims 1-13, 15 and 16 are pending in the application. Claim 14 is cancelled.

-The objection to claim 2 has been withdrawn due to applicant amending this claim accordingly.

-The double patenting rejection of claims 1, 4 and 5 has been withdrawn due to filing of the terminal disclaimer filed 6/3/10 which has been approved.

Applicant's arguments have been fully considered but they are not persuasive. Applicants arguments as to the secondary art (WO '398) not providing taper roller bearings (TRB) support with the claimed boogie plate is acknowledged, however; although this secondary art doesn't use a boogie plate per se, it does teach that it is well known in the art to use TRB's to support planet gears as claimed. The primary arts (WO '644, 690 and 566) used in the rejections discloses all the elements (including the boogie plate) as claimed except the taper bearing limitation. The examiner's position is that it would be obvious to use TRB's as disclosed in WO '398 for supporting planet gears just as the SRB's (spherical bearings/axial radial bearings) of the primary arts support the same type of planet gears as claimed. In other words, replacing the primary arts bearings with the secondary arts bearings would not modify operation of the primary arts turbine drive. Contrary to applicant's argument, the examiner is not making the obviousness conclusion by "simple similarities", but is making the conclusion for

obviousness by what one of ordinary skill in the art would know at the time the invention was made which is that it is well known to use TRB's for supporting the claimed planet gears in combination with the primary arts boogie plate structure which meets the elements of the claimed planetary gear transmission with boogie plate as in claim 1. To support this, the examiner disclosed in the office action filed 3/8/10 multiple reasons from the WO '398 art why taper bearings are used for supporting planet gears of a turbine drive and even if (as applicant argues) these reasons were given as compared to cylindrical bearings within the same art, the reasons are none the less still factual support as to why it would be obvious to use TRB's to support the type of planet gears as claimed, even in planet gears using boogie plates (reasons don't eliminate any particular type of carrier).

Applicant's argument as to the use of TRB's not being known for use at the time of the present invention and the SRB's of the primary arts having a degree of freedom which made SRB's preferable over TRB's is acknowledged, however; these statements are purely argumentative and do not overcome the rejection because these statements, although they maybe true, are not factually supported. The declaration filed 11/9/09 which was supposed to factually support these statements was also purely argumentative and didn't provide evidence to support the statements to obviate the rejections, MPEP 716.01(c) [R-2] and 716.02. Even if, as applicant argues, SRB's were the bearings of choice in these drive systems at the time the invention was made, this doesn't mean that TRB's can't be used and applicant's arguments that the primary arts themselves support the statement that SRB's were preferred over TRB's is actually not

supported by the primary arts because all three discuss nothing about "degrees of freedom" or the preferable use of SRB's over TRB's, in fact the primary arts are silent as to the benefit of using SRB's for supporting planet gears of the turbine drive.

In conclusion, the use of boogie plates as claimed is clearly met by the primary arts used in the rejections and the supporting of planet gears by TRB's for turbine drives is well known in the art via the secondary art used in the rejections, therefore; one of skill in the art would have known to use or at least consider using TRB's in turbine drives of the primary arts in view of the secondary art to obtain the present invention.

As to applicant's argument pertaining to claim 5, the examiner didn't recognize that in the WO '644 art that a single bearing supports the planet gears, but in the office action, the examiner actually stated that 25 shows separate bearings (at least two sets of rollers) for 17a, 17b which can be considered a bearing pair within each bearing 17a, 17b.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-12, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/079644 in view of WO 0157398 (US publication 20030123984). As to claim 1, WO discloses a sun (14), planet (17) and ring gears (7) and a planet carrier (5), the carrier having circumferentially spaced studs (5b) which

support a bogie plate (21), the bogie plate providing support for circumferentially spaced shafts (19) which supports and locates circumferentially spaced planet gear bearings (25) on which the planet gears are mounted. WO doesn't disclose the bearings being taper roller bearings.

WO 398 discloses a planetary gear transmission having a sun, planet and ring gear and a carrier wherein circumferentially spaced shafts (30) support and locate circumferentially spaced planet gear bearings (32) in the form of taper roller bearings on which the planet gears are mounted.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to replace the bearings of WO into taper roller bearings in view of WO 398 to better distribute contact pressure of the rollers due to inclined direction of loading which increases the amount of material available for distributing the load in the interaction with the loads coming from the gears (also see WO 398 paragraphs [0025] to [0029] for further reasons for using taper roller bearings).

As to claim 2, WO discloses the planet gears arranged in axially aligned pairs (17a, 17b are at least two sets).

As to claim 3, WO discloses the bearings (25) supporting the pairs of aligned planet gears.

As to claim 4, WO discloses two pairs of each set positioned on opposite sides of the plate (17a and 17b are on opposite sides of plate 21).

As to claim 5, WO in view of WO '398 discloses the planet gears being each mounted on a pair of roller bearings (in Figure 3, 25 has separate bearings formed into

a pair for 17a and 17b) and in view of WO '398 which teaches that taper bearings can be used as the pair of roller bearings.

As to claim 6, WO in view of WO 398 discloses a pair of tapered roller bearings arranged in an O configuration (WO 398, paragraph [0026] discloses that two tapered bearings in O-arrangement results in better stability).

As to claim 7, WO discloses the bearings being supported by a shaft (19) which self adjust in an angular position relative to the plate.

As to claim 8, WO discloses the bearings for some of the planets being supported on a shaft (not referenced) rigidly secured to the bogie plate.

As to claim 9, WO discloses each shaft rigidly secured to the plate.

As to claims 10, 15 and 16, WO discloses the bogie plate (21) being able to deform elastically (slightly resilient) to allow self adjustment of the angular position of each shaft relative to the axis of rotation of the ring gear.

As to claim 11, WO discloses a main bearing (27) having an inner ring bearing surface (27b) of a diameter greater than that of a toothed surface of the ring gear.

As to claim 12, WO discloses the carrier (5) having a radially extending torque path which is torsionally stiff (due to bolting to hub) but relatively compliant in an axial direction parallel with the axis about which the forces act.

Claims 1-13, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/14690 in view of WO 0157398 (US publication 20030123984). As to claim 1, WO discloses (see Figure 4) a sun, planet and ring gears and a planet carrier, the carrier having circumferentially spaced studs (42) which

support a bogie plate (21), the bogie plate providing support for circumferentially spaced shafts (44) which supports and locates circumferentially spaced planet gear bearings on which the planet gears are mounted. WO doesn't disclose the bearings being taper roller bearings.

WO 398 discloses a planetary gear transmission having a sun, planet and ring gear and a carrier wherein circumferentially spaced shafts (30) support and locate circumferentially spaced planet gear bearings (32) in the form of taper roller bearings on which the planet gears are mounted.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to replace the bearings of WO into taper roller bearings in view of WO 398 to better distribute contact pressure of the rollers due to inclined direction of loading which increases the amount of material available for distributing the load in the interaction with the loads coming from the gears (also see WO 398 paragraphs [0025] to [0029] for further reasons for using taper roller bearings).

As to claim 2, WO discloses the planet gears arranged in axially aligned pairs (Figure 4).

As to claim 3, WO discloses the bearings supporting the pairs of aligned planet gears (Figure 4).

As to claim 4, WO discloses two pairs of each set positioned on opposite sides of the plate (Figure 4).

As to claim 5, WO in view of WO '398 discloses the planet gears being each mounted on a pair of roller bearings (Figure 4) and in view of WO '398 which teaches that taper bearings can be used as the pair of roller bearings.

As to claim 6, WO discloses the tapered roller bearings arranged in an O configuration (claim 21).

As to claims 7 and 13, WO discloses the bearings being supported by a shaft (26 flexpin shaft) which self adjust in an angular position relative to the plate.

As to claim 8, WO discloses the bearings for some of the planets being supported on a shaft (not referenced) rigidly secured to the bogie plate.

As to claim 9, WO discloses each shaft rigidly secured to the plate.

As to claims 10, 15 and 16, WO discloses the bogie plate being able to deform elastically to allow self adjustment of the angular position of each shaft relative to the axis of rotation of the ring gear.

As to claim 11, WO discloses a main bearing having an inner ring bearing of a diameter greater than that of a toothed surface of the ring gear (claim 3).

As to claim 12, WO discloses the carrier having a radially extending torque path which is torsionally stiff but relatively compliant in an axial direction parallel with the axis about which the forces act (claim 6).

Claims 1-13, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 03/014566 in view of WO 0157398 (US publication 20030123984). As to claim 1, WO discloses (see claim 1) a sun, planet and ring gears and a planet carrier, the carrier having circumferentially spaced studs (42) which

support a bogie plate (21), the bogie plate providing support for circumferentially spaced shafts (44) which supports and locates circumferentially spaced planet gear bearings on which the planet gears are mounted. WO doesn't disclose the bearings being taper roller bearings.

WO 398 discloses a planetary gear transmission having a sun, planet and ring gear and a carrier wherein circumferentially spaced shafts (30) support and locate circumferentially spaced planet gear bearings (32) in the form of taper roller bearings on which the planet gears are mounted.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to replace the bearings of WO into taper roller bearings in view of WO 398 to better distribute contact pressure of the rollers due to inclined direction of loading which increases the amount of material available for distributing the load in the interaction with the loads coming from the gears (also see WO 398 paragraphs [0025] to [0029] for further reasons for using taper roller bearings).

As to claim 2, WO discloses the planet gears arranged in axially aligned pairs (claim 2).

As to claim 3, WO discloses the bearings supporting the pairs of aligned planet gears (claim 2).

As to claim 4, WO discloses two pairs of each set positioned on opposite sides of the plate (claim 3).

As to claim 5, WO in view of WO '398 discloses the planet gears being each mounted on a pair of roller bearings (claim 19) and in view of WO '398 which teaches that taper bearings can be used as the pair of roller bearings.

As to claim 6, WO discloses the tapered roller bearings arranged in an O configuration (claim 27).

As to claims 7 and 13, WO discloses the bearings being supported by a shaft (26 flexpin shaft) which self adjust in an angular position relative to the plate (claim 4).

As to claim 8, WO discloses the bearings for some of the planets being supported on a shaft (Figure 4) rigidly secured to the bogie plate.

As to claim 9, WO discloses each shaft rigidly secured to the plate (Figure 4).

As to claims 10, 15 and 16, WO discloses the bogie plate being able to deform elastically to allow self adjustment of the angular position of each shaft relative to the axis of rotation of the ring gear (claims 1 and 4).

As to claim 11, WO discloses a main bearing having an inner ring bearing of a diameter greater than that of a toothed surface of the ring gear (claim 10).

As to claim 12, WO discloses the carrier having a radially extending torque path which is torsionally stiff but relatively compliant in an axial direction parallel with the axis about which the forces act (claim 13).

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 644 in view of WO 398 as applied to claim 1 above, and further in view of WO 690 and WO 566). WO 644 in view of WO 398 disclose the planet gears supported to the bogie plate by a shaft, but does not disclose the shaft being of a flexpin.

Both WO 566 and WO 690 references disclose a shaft (26) being of a flexpin operation due to flexing of component (33).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the shaft (19) of WO 644 in view of WO 398 and further in view of both WO 566 and WO 690 references to isolate axial forces from the planet gears during operation.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **TISHA D. LEWIS** whose telephone number is 571-272-7093. The examiner can normally be reached on **M-F 9:30AM TO 6:00PM**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Le can be reached on 571-272-7092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tdl
/TISHA D. LEWIS/
Primary Examiner, Art Unit 3655
August 15, 2010